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A GUIDE FOR TREE PLANTING IN THE SOUTHWEST VIRGINIA COUNTIES IN THE TENNESSEE VALLEY[1/]

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This is a tree planting guide designed chiefly for the use of county agents, extension foresters, farm foresters, and others who are in a position to advise landowners regarding tree planting. It applies particularly to that part of southwest Virginia within the Tennessee Valley. The counties included are: Lee, Wise, Scott, Russell, Smyth, Washington, Tazewell, and small parts of Bland and Wythe.

It should be pointed out at once that reforestation is not a major farm or forest problem of the region. The prevailing limestone soils and relatively cool climate make this an excellent pasture region. The rougher lands and extreme upper slopes and ridges are almost entirely hardwood timber. The bottoms and extreme lower slopes are cultivated.

It is not the chief purpose of this report to discuss land use but rather to tell what tree species should be planted on the planting site selected by the landowner. However, a general statement will be made as a rough guide to those who want to plant trees but who are not sure what or where they should be planted. In general, most planting should be done on the following situations:

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1. Soils derived from sandstones, shales, and cherty limestones, such as Muskingum, Montevallo, and Clarksville. These will be mostly third, fourth, and fifth class soils over about 30 percent in steepness.

2. Any soils, if the slope steepness is 60 percent or more.

Sites other than the two general classes above, if properly managed, will very likely give greater returns from pasture or agricultural use. A list and brief description of more specific problem areas is given in the next section.

Place of Reforestation in the Land-use Pattern

In the region under consideration there are perhaps six definite situations where planting of trees is justified and beneficial. It is assumed, of course, that such areas are not restocking naturally to desirable tree species. On upper slopes adjacent to hardwood timber, hardwood reproduction comes in rather readily on abandoned pastures or fields. The six tree planting situations are as follows:

Pasture Rehabilitation

The planting of black locust combined with complete elimination of grazing will almost always restore overgrazed and eroded pastures. This type of planting should be done on real pasture soils and pasture topography such as Frederick or Hagerstown, on slopes less than 60 percent. It is very important that grazing be eliminated until the locust foliage is above the reach of stock and until a good grass sod is formed. Trees should be spaced 6 by 6 feet on the most eroded sites and 8 by 8 on the better sites with a deeper soil and some grass cover. In most cases locust planted on such sites will not produce posts. The chief purpose of the planting would be pasture rehabilitation, and the specifications for locust in the planting chart need not be followed.

Badly Eroded Shale and Sandstone Areas

Eroded areas of shale or sandstone soils should be planted to Virginia pine, shortleaf pine, or pitch pine. The soils likely to be involved are Montevallo, Lehew, Muskingum, Dekalb, Dandridge, Litz, etc. The most eroded areas should be planted to Virginia pine. The better areas with some topsoil remaining may be planted to shortleaf pine or pitch pine. The latter species should be confined to elevations over 2,500 feet as shortleaf is the superior tree at lower elevations. Virginia pine may be planted at any elevation ordinarily found in pasture or agricultural use in the region.

Ordinarily, spacing should not be closer than 6 by 6 feet except that Virginia pine may be planted 5 by 5 feet on the most eroded areas. Spacing of 4 by 4 costs over twice as much for planting as 6 by 6 and trees are so dense that the growth rate is greatly reduced.

Abandoned Old Fields or Pastures

Old fields or pastures not restocking to natural tree reproduction and unsuitable for pasture should be planted. There is very little of this class of land in the region. Soil types involved may be any except the first and second class soils in such series as Dunmore, Frederick, and Hagerstown. Such soils are almost always good pasture lands.

The species used should depend on the soil-site conditions. In general, the pines and red cedar would be most suitable with perhaps some yellow-poplar and black locust on the moister lower slopes with good soil depth.

Limestone Outcrop Land

Limestone outcrop land too poor for pasture may be planted to red cedar for post production. This is the only species that will succeed on the worst of these areas with very shallow soil and steep topography. Carbo and Bland are examples of soils often showing this character.

Reinforcement Planting in Poor Hardwood Reproduction

Abandoned areas often come in to various brushy and undesirable hardwood species which will have no particular value except to prevent erosion and gradually improve the site. Most such abandoned sites, especially if they have been cultivated and eroded, are rather poor hardwood sites and would be helped by a mixture of pines. Pine will produce salable products on poorer sites than hardwoods.

On such areas planting of shortleaf, white, or pitch pine should be done in the openings between the natural vegetation. White pine should be used on the better sites and the northerly and easterly slopes. It will tolerate greater shade than either shortleaf or pitch pine. Shortleaf should be used on the poorer sites and in the more sparse cover. Pitch should be used only on poor sites at the higher elevations.

In general, openings about twice as wide as the height of the surrounding trees may be planted without later cutting to release the planted trees. Planting under thin-crowned, short-lived trees such as sassafras can usually be done without release.

Production of Locust Fence Posts

Planting of black locust exculsively for fence post production is justified on excellent agricultural or pasture lands. Locust requires a deep, loamy soil for satisfactory post production and one acre of locust on such a site will produce more posts than 50 acres on an eroded upland soil with a tight subsoil. In fact, the latter area probably would not produce any posts. Small areas of excellent loamy soil may well give more return from fence posts than from any other use. On such land posts could easily be produced on a 10-to-12 year rotation. Replanting would not be necessary as locust sprouts vigorously on good sites.

Planting Guide

A planting chart designed to serve as a guide in selecting species for particular sites, or selecting sites for particular species, is given. If used in conjunction with the other material in this report it should insure satisfactory matching of species to site.

PLANTING CHART; SOUTHWEST VIRGINIA

Species Recommended for Planting and Their Requirements

Species to be planted	Soil and site characteristics needed for planting success
Shortleaf Pine Pitch Pine	1. All slopes and ridges, avoid poorly drained areas. 2. Severe erosion allowable, top layer of dark colored soil (topsoil) may be absent or mixed with lower layer of reddish soil. 3. Topsoil, if present, may be plastic, under layer may be compact and cloddy and slick when plowed. No special soil conditions needed. 4. Dense and overtopping vegetation causes heavy mortality. Broomsedge, light to moderate weed cover, or bare areas satisfactory. Do not plant shortleaf pine on areas over about 2,500-foot elevation, substitute pitch pine or Virginia pine. On pure limestone areas it is preferable to substitute red cedar for shortleaf pine.
Virginia Pine Red Cedar	1. All slopes and ridges, avoid poorly drained areas. 2. Severe erosion allowable, top layer of dark colored soil may be absent. 3. Dry sites, often with thin soil layer on bed rock with numerous rock outcrops, soil may be compact and cloddy. Plant red cedar on limestone areas and Virginia pine on shale areas. 4. Vegetation usually sparse on these areas, dense vegetation harmful to success. If planted on better sites, especially limestone areas, red cedar may return equal or greater value than other species. In general, do not plant red cedar in the Appalachian Mountain region, except on limestone soils. Virginia pine is suitable for gully control. Do not plant red cedar within one-fourth mile of apple orchards.

PLANTING CHART; SOUTHWEST VIRGINIA (Cont.)

Species Recommended for Planting and Their Requirements

Species to be planted	Soil and site characteristics needed for planting success
White Pine	1. North and east slopes, lower to middle south and west slopes, broad ridge tops or upper slopes of low hills. Avoid very steep southerly slopes 2. Moderate erosion allowable, top layer of dark colored soil (topsoil) 5 inches or more deep. 3. Topsoil loose and friable or mellow when worked, layer beneath may be plastic or moderately compact but not dense and cloddy. Avoid heavy pure clays, drainage should be fair to good. 4. Light, open cover beneficial, broomsedge cover, moderate weed cover, or scattered low brush satisfactory. Avoid tall dense briars or brush. White pine will not succeed on badly eroded old fields with a very shallow topsoil and a dense, heavy clay under layer. At elevations over about 2,500 feet in the Appalachian Mountains, soil and site requirements may be slightly relaxed.
Yellow-poplar Black Locust White Ash	1. North and east slopes, lower to middle south and west slopes, coves, well drained bottoms, and sink holes. Except for locust, very steep southerly slopes should be avoided. Locust will tolerate exposed sites if soil conditions are favorable. 2. No apparent erosion, top layer of dark colored soil (topsoil) 6 inches or more deep. 3. Topsoil and at least 12 inches of soil layer beneath loose and friable or mellow when worked, does not become hard and cloddy, drainage good. 4. Moderate to heavy cover of briars, tall weeds and brush (sassafras, etc.) beneficial for yellow-poplar and white ash. Light open cover beneficial for black locust. Dense, rank briars and weeds indicate good sites, avoid sod and broomsedge without briars or some brush. These hardwoods will not grow on dry exposed slopes and ridges and abandoned old fields with a shallow topsoil and heavy, compact under layer. Black locust is suitable for deep gully control on light soils or where soil has accumulated in gully bottoms.

PLANTING CHART; SOUTHWEST VIRGINIA (Cont.)

Species Recommended for Planting and Their Requirements

Species to be planted	Soil and site characteristics needed for planting success
Black Walnut	1. Lower slopes, coves, well drained bottoms, and sink holes. 2. No apparent erosion, top layer of dark colored soil (topsoil) 8 inches or more deep. 3. Topsoil and at least 16 inches of soil layer beneath loose and friable or mellow when worked, does not become hard and cloddy, drainage good. 4. Light to moderate cover of vegetation desirable, moderately heavy cover usually not harmful, cover of rank weeds, blackberry, or sassafras and blackberry indicates good sites, avoid broomsedge. Walnut will not grow on dry, exposed slopes and ridges and abandoned old fields with a shallow topsoil and heavy, compact under layer.